ABSTRACT OF THE DISCLOSURE

A silicon electrode for a plasma reaction chamber wherein processing of a semiconductor substrate such as a single wafer can be carried out and a method of processing a semiconductor substrate with the electrode. The electrode is a low resistivity electrode having an electrical resistivity of less than 1 ohm-cm. The electrode can be a zero defect single crystal silicon or silicon carbide electrode such as a showerhead electrode bonded or clamped to support such as a temperature controlled plate or ring. The showerhead electrode can be in the form of a circular disk of uniform thickness and an elastomeric joint can be provided between a support ring and the electrode. The electrode can include gas outlets having 0.020 to 0.030 inch diameters.